

**REMARKS**

Claims 6, 10 and 15-18 are pending. Applicant proposes amendment of claims 6 and 15.

Examiner Diaz is thanked for the courtesies extended to the undersigned attorney during the personal interview conducted on December 2, 2004. Applicant's separate record of the substance of that interview is incorporated into the following discussion. In the event that the response is not considered to place the application in condition for allowance, Examiner Diaz is encouraged to telephone applicant's undersigned attorney.

Claims 6, 15 and 16 were rejected under 35 USC §103(a) as being unpatentable over Ito et al. in view of Wristers et al.. Favorable reconsideration of this rejection is requested in view of the amendments made herein.

Applicant proposes amendment of claim 6 to specify that the N atoms do not penetrate into the substrate. Claim 10 currently sets forth that said N atoms do not reach said substrate. In addition, claim 6 has been amended to set forth a step of forming a contact hole through said gate oxide film. It is respectfully submitted that the cited art fails to teach or suggest the features of the amended claims.

As noted at the interview, Ito et al. teaches formation of a nitrogen region 24 in the substrate. Thus, for at least this reason, the combination of references fails to teach or suggest the claimed invention.

Claim 6 has further been amended to specify forming a contact hole through said gate oxide film. Ito et al. fails to provide any teaching with respect to this step.

Wristers et al. was relied upon by the Examiner for its disclosure of incorporation of nitrogen into a pre-existing oxide. Wristers et al. fails to provide the teachings which Ito et al lacks.

Claims 10, 17 and 18 were rejected under 35 USC §103(a) as being unpatentable over Duane. Favorable reconsideration of this rejection is respectfully requested.

In regard to Duane, the Examiner comments that the features upon which applicant relies are not recited in the rejected claims.

The prior response, however, had argued that Duane does not teach the step of introducing N atoms into said gate oxide film. Duane teaches that an edge dopant is implanted into the edges 205a of the gate electrode 205. The arguments directed to the nitrogen atoms being concentrated to the interface between the gate oxide film and the silicon substrate, and the dangling bonds being effectively terminated at the interface, are direct results of the claimed method which introduces N atoms into said gate oxide film.

Due to the difference between the present invention which introduces N atoms into the gate oxide film while using the gate electrode pattern as a mask and Duane which introduces the nitrogen atoms into a side wall surface of the gate electrode, it would not have been obvious to "optimize" the ion implantation to the claimed acceleration voltage and dose. As argued in the prior response, Duane teaches that the nitrogen containing species may be implanted at

Amendment After Final Rejection  
Serial No. 09/428,052  
Attorney Docket No. 970901A

approximately 50keV and a concentration of  $1E14$  to  $1E16$  atoms/cm<sup>2</sup>. Since this implantation is directed to doping the edge portions 205a, it would not have been obvious to conduct ion implantation at the claimed acceleration voltage since Duane is not concerned at all with introducing N atoms into the gate oxide film.

Accordingly, for at least the foregoing reasons, it is respectfully submitted that claims 10, 17 and 18 distinguish over Duane. However, in the event that the Examiner considers that further amendment of these claims would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicant's undersigned attorney.

Fore at least the foregoing reasons, the claimed invention distinguishes over the cited art. Favorable reconsideration is earnestly solicited.

If this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

**WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP**



Stephen G. Adrian

Attorney for Applicant

Registration No. 32,878

Telephone: (202) 822-1100

Facsimile: (202) 822-1111

SGA/arf